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Snow Surveyors Climbing to a Snow Course

FEDERAL-STATE COOPERATIVE
SNOW SURVEYS AND IRRIGATION WATER FORECASTS

for

ARIZONA

FEBRUARY 15, 1946

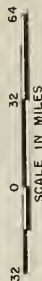
By

Division of Irrigation, Soil Conservation Service
United States Department of Agriculture

Data included in this report were obtained by the agency named above in cooperation with the Federal, State, and local organizations listed on the last page of this report.

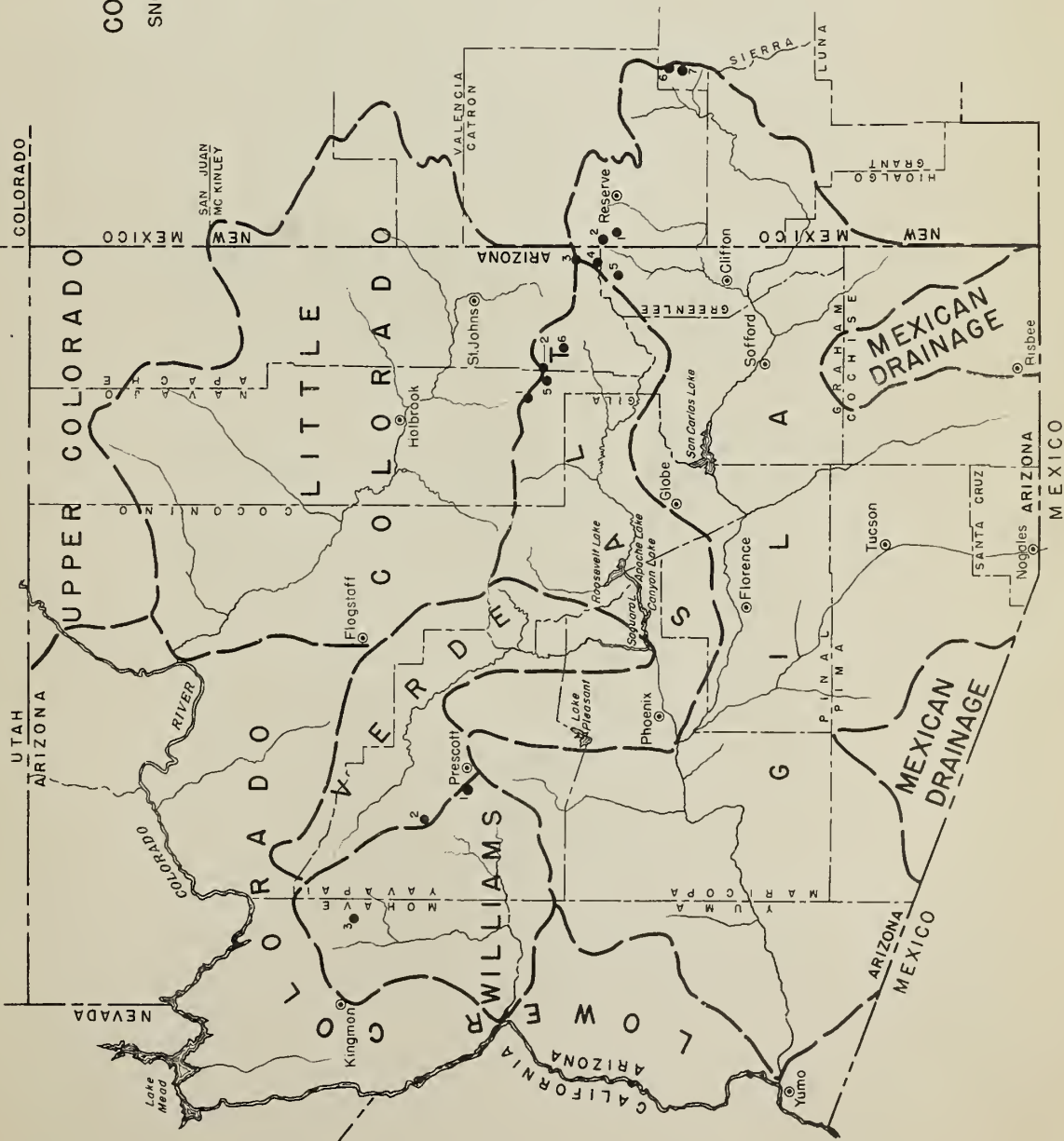
ARIZONA COOPERATIVE SNOW SURVEYS SNOW COURSES AND DRAINAGE BASINS

October 16, 1945



INDEX TO SNOW COURSES

Number	Name	Elevation
Little Colorado River		
1.	Forest Dale	6,000
2.	Melery	7,200
3.	Maricopa	8,500
Williams River		
1.	Iron Springs	6,200
2.	Camp Wood	5,700
3.	Willow Ranch	5,000
Gila River		
1.	(Hill) Price Divide	8,000
2.	(Hill) State Line	8,000
3.	Natrisco	6,500
4.	Coronado Trail	6,000
5.	Canyon Head	6,000
6.	(Hill) Taylor Creek	7,000
7.	(Hill) Juman	7,000
Verde River		
1.	Iron Springs	6,200
2.	Camp Wood	5,700
Salt River		
1.	Forest Dale	5,000
2.	Melery	7,200
3.	Maricopa	8,500
4.	Coronado Trail	8,000
5.	Milk Branch	7,000
6.	May	8,250



WATER SUPPLY OUTLOOK

Arizona
February 15, 1946

* * * * *
*
* February 15, 1946 snow surveys in-*
* dicate that water content of snow *
* on Little Colorado and Salt Rivers*
* is about normal while the Gila is *
* low. Precipitation since January *
* 1 on the major watersheds ranges *
* from normal to less than normal, *
* while runoff and reservoir storage*
* is below normal. *
*
* * * * *

Precipitation Since January 1 precipitation on the higher elevations of Little Colorado, Gila and Salt River Watersheds was above normal while that in the valley was below normal. For the same period on Williams and Verde Watersheds, both valley and mountain precipitation was below normal.

Snow Cover As of February 15, 1946 snow cover on the higher elevations of Little Colorado Watershed is above both the 1939-46 average and last year. Snow cover on Salt River is about average although greater than last year, while Gila River Watershed is still below average. The water content of snow on Fort Apache Indian Reservation (Salt River Watershed) is about 140 percent of the February 15 average and about 300 percent of the 1945 figure for the same date. Soil moisture conditions on the Reservation are good, while conditions in the Salt River Valley are fair. Water content of snow on Apache National Forest (Gila River Watershed) continues low, with the February 15, 1946 content about 50 percent of both the 1939-46 average and the 1945 figure on the same date. Soil moisture conditions on the upper reaches of the Gila are from fair to poor while the valley irrigated soils are dry. General snow cover and soil moisture conditions on the upper Williams are below normal.

Runoff Stream discharge over the state was generally below normal, during January, although there was some improvement over the October through December period. During January Gila River was about 95 percent of normal, Little Colorado and Salt Rivers about 93 percent and Verde River above Horseshoe Dam about 81 percent of normal. The Williams River continues to run somewhat below normal. The February 15 report from Fort Apache Indian Reservation indicates that streamflow on the Reservation is low for this time of the year.

Reservoir Storage Present water storage in most of the important Arizona reservoirs is below the February 15 average, with only slight increase over storage of a month ago. As of this date Lake Mead is 98 percent of storage on the same date last year and 92 percent of the 1939-45 average. Salt River Reservoirs are 81 percent of last year and 98 percent of the 1931-45 average, with San Carlos Reservoir storage 27 and 12 percent for the same dates. Bartlett Reservoir is extremely low, containing only 956 acre feet in comparison to 17,143 last year. Lake Pleasant is 47 percent of last year and only 11 percent of 1931-45 average. Lyman Reservoir on Little Colorado River is 161 percent of 1945 but only 45 percent of the 1941-45 average for this date. The new reservoir created by Horseshoe Dam above Bartlett on Verde River has increased storage over January 15, 1946 by 424 acre feet.

With Soil moisture conditions in the irrigated valleys and on the higher elevation of the watersheds ranging from fair to poor and snow water storage on the watersheds ranging from normal to below normal, there is need for above normal precipitation throughout the state to bring reservoir storage levels up to required amounts.

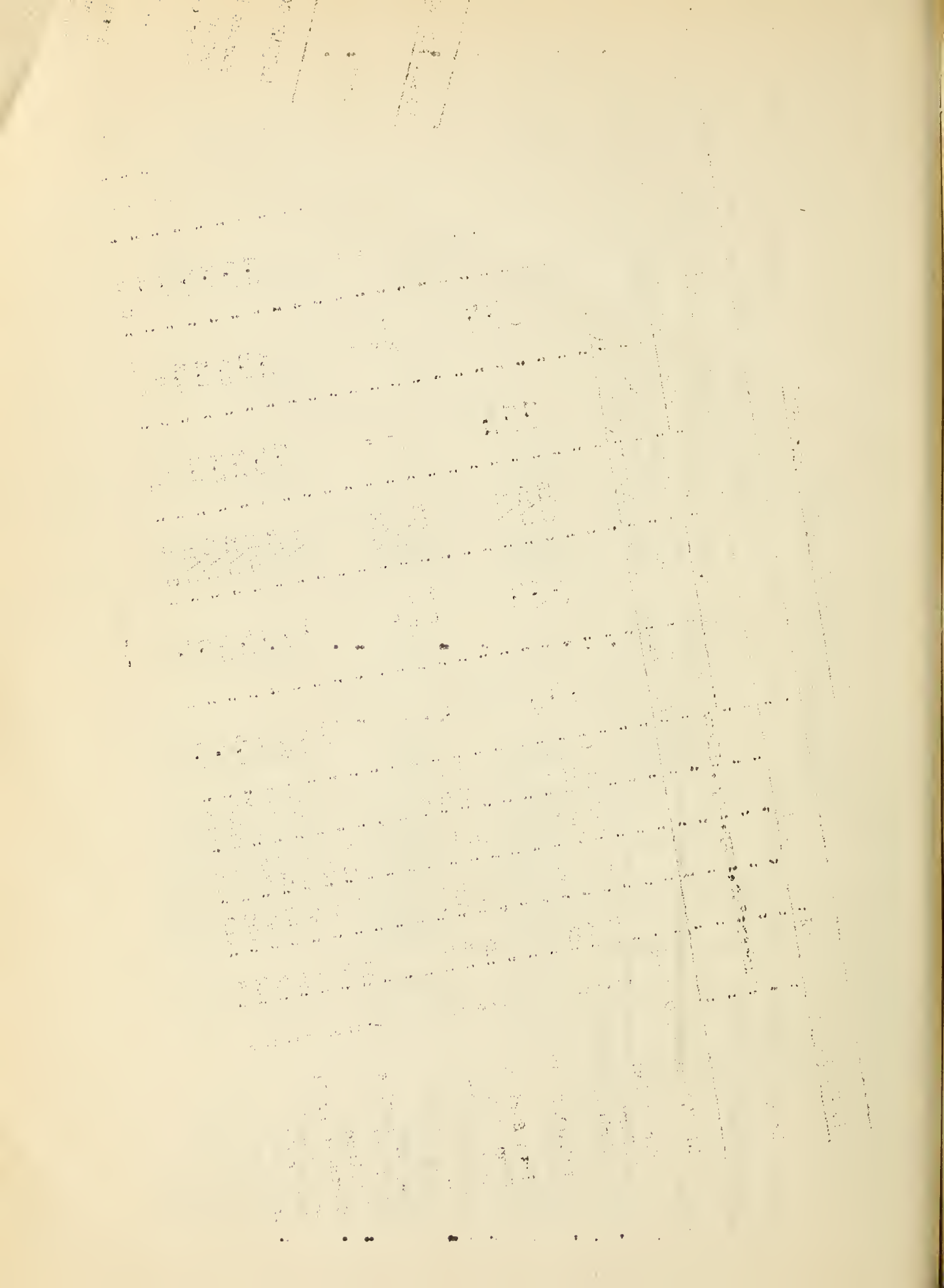
The first part of the paper discusses the importance of the study of the history of the United States. It is argued that a knowledge of the past is essential for a full understanding of the present. The author then proceeds to discuss the various factors that have shaped the development of the United States, including the role of the government, the influence of the economy, and the impact of the culture.

In the second part of the paper, the author examines the role of the government in the development of the United States. It is argued that the government has played a crucial role in shaping the country's history, from the founding of the nation to the present day. The author then discusses the various ways in which the government has influenced the economy, the culture, and the society of the United States.

The third part of the paper discusses the influence of the economy on the development of the United States. It is argued that the economy has played a crucial role in shaping the country's history, from the founding of the nation to the present day. The author then discusses the various ways in which the economy has influenced the government, the culture, and the society of the United States.

SNOW SURVEYS FEBRUARY 15, 1946

BASIN AND SNOW COURSE:		LOCATION		SNOW COVER MEASUREMENTS									
:	:	:	:	:	:	:	:	:	:	:	:	:	:
Name	Number	Sec.	Twp.	Rge.	Elev.	February 15, 1946:	Actual:	Past February 15	Water Depth	1946 as			
:	:	:	:	:	:	Snow	Date	1945	1944	Average	of	Years	Percent
:	:	:	:	:	:	Depth	of	Survey	(inches)	(inches)	Record	Average	
:	:	:	:	:	:	(inches)	Survey	(inches)	(inches)	(inches)	Record	Average	
LITTLE COLORADO RIVER:													
Forest Dale	1	2	9N	21E	6000:	9.0	2/15	0.1	0	0.7	7	357	
McNary	2	14	8N	23E	7200:	11.0	2/15	2.1	0.7	2.9	7	107	
Nutriosio	3	23	6N	30E	8500:	6.0	2/15	1.6	0.7	2.4	7	71	
WILLIAMS RIVER													
Iron Springs	1	22	14N	3W	6200:	1.0	2/12	New	Snow	Course	1		
Camp Wood	2	3	16N	6W	5700:	0.3	2/15	"	"	"	1		
Willow Ranch	3	16	21N	11W	5000:	0	2/14	"	"	"	1		
GILA RIVER													
Frisco Divide	1	31	6S	20W	8000:	5.9	2/15	3.1	1.0	2.4	7	54	
State Line	2	6	6S	21W	8000:	5.8	2/15	4.2	1.6	3.4	7	44	
Nutriosio	3	23	6N	30E	8500:	6.0	2/15	1.6	0.7	2.4	7	71	
Coronado Trail	4	26	5N	30E	8000:	5.7	2/15	3.4	1.2	4.0	7	40	
Beaver Head	5	13	4N	30E	8000:	8.5	2/15	4.6	0.3	3.7	7	62	
Taylor Creek	6	20	10S	10W	8500:	3.0	2/15	New	0	0.5	4	220	
Inman	7	6	11S	10W	7800:	3.9	2/15		Snow	Course	1		



SNOW SURVEYS FEBRUARY 15, 1946

B. SIM. MD. SNOW COURSE:				LOCATION		SNOW COVER MEASUREMENTS									
Number:		Sec.:	Twp.:	Rge.:	Elev.:	February 15, 1946:		Actual:	Past February	15 Water	Depth	1946 as			
Name						Snow	Water	Date			Years	Percent			
						Depth	Depth	of	1945	1944	Average	of			
						(inches):	(inches):	Survey:	(inches):	(inches):	Record:	Average			
VERDE RIVER															
1	22	14N	3W	6200	1.0	Trace	2/12	Now	Snow	Course	1				
2	3	16N	6W	5700	0.3	Trace	2/15	"	"	"	1				
SALT RIVER															
1	2	9N	21E	6000	9.0	2.5	2/15	0.1	0	0.7	7	557			
2	14	8N	23E	7200	11.0	3.1	2/15	2.1	0.7	2.9	7	107			
3	23	6N	30E	8500	6.0	1.7	2/15	1.6	0.7	2.4	7	71			
4	26	5N	30E	8000	5.7	1.6	2/15	3.4	1.2	4.0	7	40			
5	28	8N	23E	7000	6.2	1.6	2/15	0.2	0	1.4	6	114			
6	13	7N	24E	8250		Report	Now	Snow	Course						

STATUS OF RESERVOIR STORAGE AS OF FEBRUARY 15

In the following tabulation water storage in important Arizona reservoirs as of about February 15, 1946 is compared with storage as of approximately the same date in 1945, 1944 and with the designated average.

Storage Reservoirs	Stream Basin	Capacity Acre-Feet	Acre - Feet in Storage about February 15			Years used for average
			1946	1945	1944	
Lake Mead	: Lower Colorado :	: 31,142,000 :	: 21,768,000 :	: 22,293,000:	: 23,460,000:	: 23,635,000 : 1939 - 1945
Salt River Reservoirs	: Salt :	: 1,770,000 :	: 724,523 :	: 890,581:	: 1,022,060:	: 743,076 : 1931 - 1945
San Carlos	: Gila :	: 1,200,000 :	: 28,388 :	: 105,000:	: 281,000:	: 227,960 : 1931 - 1945
Lake Havasu	: Lower Colorado :	: 688,000 :	: 604,600 :	: 570,904:	: 565,340:	: 503,620 : 1939 - 1945
Bartlett	: Verde :	: 179,500 :	: 956 :	: 17,143:	: 19,571:	: 66,966 : 1941 - 1945
Lake Pleasant	: Agua Fria :	: 178,500 :	: 3,534 :	: 7,472:	: 2,754:	: 31,826 : 1931 - 1945
Horseshoe	: Verde :	: 60,000 :	: 10,020:	New Reservoir		:
Lyman	: Little Colorado:	: 28,500 :	: 3,660:	: 2,280:	: 3,250:	: 8,110 : 1941 - 1945

LIST OF SNOW SURVEYORS

<u>SNOW COURSE</u>	<u>SURVEYOR</u>
Forest Dale	Ward T. Kindred
McNary	Ward T. Kindred
Nutrioso	R. L. Diggs
Iron Springs	Ernest Saxby
Camp Wood	Mrs. C.C.Merritt
Willow Ranch	Tiny Miller
Frisco Divide	Dean M. Earl
State Line	Dean M. Earl
Coronado Trail	R. L. Diggs
Beaver Head	Jes Burke
Taylor Creek	F. M. Inman
Inman	F. M. Inman
Milk Ranch	Ward T. Kindred

1. The first part of the paper is devoted to a general discussion of the problem of the existence of a solution of the system of equations (1) for arbitrary values of the parameters α and β . It is shown that the system has a solution for arbitrary values of the parameters α and β if and only if the condition $\alpha + \beta = 1$ is satisfied. This condition is also necessary for the existence of a solution of the system of equations (1) for arbitrary values of the parameters α and β .

2. In the second part of the paper, the problem of the existence of a solution of the system of equations (1) for arbitrary values of the parameters α and β is solved. It is shown that the system has a solution for arbitrary values of the parameters α and β if and only if the condition $\alpha + \beta = 1$ is satisfied. This condition is also necessary for the existence of a solution of the system of equations (1) for arbitrary values of the parameters α and β .

3. In the third part of the paper, the problem of the existence of a solution of the system of equations (1) for arbitrary values of the parameters α and β is solved. It is shown that the system has a solution for arbitrary values of the parameters α and β if and only if the condition $\alpha + \beta = 1$ is satisfied. This condition is also necessary for the existence of a solution of the system of equations (1) for arbitrary values of the parameters α and β .

4. In the fourth part of the paper, the problem of the existence of a solution of the system of equations (1) for arbitrary values of the parameters α and β is solved. It is shown that the system has a solution for arbitrary values of the parameters α and β if and only if the condition $\alpha + \beta = 1$ is satisfied. This condition is also necessary for the existence of a solution of the system of equations (1) for arbitrary values of the parameters α and β .

5. In the fifth part of the paper, the problem of the existence of a solution of the system of equations (1) for arbitrary values of the parameters α and β is solved. It is shown that the system has a solution for arbitrary values of the parameters α and β if and only if the condition $\alpha + \beta = 1$ is satisfied. This condition is also necessary for the existence of a solution of the system of equations (1) for arbitrary values of the parameters α and β .

The following organizations cooperate in the Arizona snow survey work:

STATE

Nevada Agricultural Experiment Station
Reno, Nevada

FEDERAL

Department of Agriculture
Forest Service
Apache Forest
Prescott Forest
Soil Conservation Service
Division of Irrigation

Department of Commerce
Weather Bureau
Arizona Section

Department of Interior
Bureau of Reclamation
Region III
Geological Survey
Arizona District
Indian Service
Fort Apache Reservation

Gila Water Commission
Safford, Arizona

IRRIGATION PROJECTS

Salt River Valley Water Users Association
Phoenix, Arizona

San Carlos Irrigation and Drainage District
Coolidge, Arizona

Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.

